

THE GENERA *PARACALAIS* GEN. NOV. AND *AUSTROCALAIS*
GEN. NOV. (COLEOPTERA : ELATERIDAE)

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Abstract

The systematic positions of the genera *Alaus* Eschscholtz and *Calais* Castelnau are discussed. They are regarded as two distinct genera, and criteria for separating them are cited.

Two new, closely-related genera are erected: *G. Paracalais* Neboiss, and *G. Austrocalais* Neboiss.

Species previously referred, in Australia, to the genus *Alaus* are transferred to *G. Paracalais*; two are synonymized, and descriptions given of 6 new species attributed to this genus.

G. Austrocalais is described, with 2 new species.

Introduction

The species of the genus *Alaus* s. lato, has been discussed by various authors, with wide disagreement as to their grouping. A full resolution of these disagreements would require a world-wide revision of all described species of this genus. The Australian species of this genus is subject for detailed discussion in the present publication. However, the generic position of Australian species must be considered in relation to the American and African groups. The complexity of the problem is indicated by the following historical and taxonomic notes, and at the conclusion a key for separating the generic groups is given.

The genus *Alaus* was first described by Eschscholtz (1829) to include two North American species—*oculatus* Linnaeus and *myops* Fabricius. Hyslop (1921) formally designated *oculatus* as the type species for the genus *Alaus*. He quoted Fabricius as the author of the species but also included a note saying that Fabricius and subsequent authors refer to Linnaeus as the actual author of *oculatus*.

Laporte de Castelnau (1836—no exact date of this publication is known and therefore assumed to have appeared at the end of December) published the name *Calais* as a new generic name to include two African species—*senegalensis* and *sinuosicollis*, and one from the West Indies—*tricolor*.

The name *Calais* had appeared in zoological literature twice before. First it was used by Rafinesque (1815) as a generic name for a group of Crustacea, but as no species were included, the name had no standing in zoological nomenclature, and can be regarded as nom. nudum. In the second instance, *Calais* was used by Boisduval (April 1836: 584-585) claiming that it was a synonym of the genus *Idmais* (Order Lepidoptera). However, the short paragraph on p. 585 does not constitute a description of *Calais*, and therefore the name again has no standing in the zoological nomenclature. This allows the name *Calais* as used by Laporte de Castelnau to be retained as a valid generic name in the family Elateridae.

Candèze (1857) placed the two original African species of *Calais*—*senegalensis* and *sinuosicollis* in the genus *Alaus*; but recognized the genus *Calais* as valid for a group of five West Indian and American species—*tricolor*, *nobilis*, *patricia*, *glauca* and *ophthalmica*.

The same author (1874) considered *Calais* to be synonymous with *Alaus*, and listed a total of 79 species under the latter name from America, Africa, Asia and

Australia. He also suppressed *senegalensis* Cast. to synonymy under *excavatus* Fab.

Schwarz (1906), regarding *Calais* as a sub-genus of *Alaus*, included 14 American species. This group contained four of Candèze's species listed above; however, it excluded the fifth, *ophthalmica* which was transferred to genus *Meroplinthus*.

Hyslop (1921) selected and formally designated *senegalensis* Cast. as type species for the genus *Calais*, but apparently overlooked that Candèze suppressed this species to synonymy of *excavatus* Fabricius. He reversed the arrangement of Schwarz, since the name *Calais* was ascribed to the African species and the name *Alaus* to the American species.

Schenkling (1925) followed the arrangement suggested by Schwarz, treated *Calais* as a sub-genus of *Alaus* and placed 16 American species in it including *oculatus* Linn., the type species of the genus *Alaus* as designated by Hyslop.

The present author suggests the segregation of American, African and Australian species into generically distinct groups—genera *Alaus* Eschscholtz, *Calais* Castelnau and *Paracalais* gen. nov. respectively.

The first genus under consideration is therefore *Alaus* Eschsch. s. stricto, with type species *oculatus* Linn. Besides the type species, the present author was able to examine only *myops* Fab. in this genus.

The second genus discussed is *Calais* Castelnau non Boisduval (1836) with type species *excavatus* Fab. (= *senegalensis* Cast.).

All of the Australian species previously described under *Alaus* belong to the new genus *Paracalais*, whereas two new species are sufficiently different to be included in another new genus—*Austrocalais*.

Detailed locality and collection data are given for new species only. The collections from which specimens were examined are listed hereunder, together with abbreviations used in text.

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|-------|--|
| AM | Australian Museum, Sydney |
| BM | British Museum (Natural History), London |
| CALIF | Californian Academy of Sciences, San Francisco |
| CSIRO | Australian National Insect Collection, CSIRO, Canberra |
| DEI | Deutsches Entomologisches Institut, Berlin |
| ETS | Private collection of Mr E. T. Smith, Melbourne |
| FH | Private collection of Mr F. Hallgarten, Melbourne |
| FTF | Private collection of Mr F. T. Fricke, Sydney |
| IRSNB | Institut Royal des Sciences Naturelles de Belgique, Brussels |
| JA | Private collection of Mr J. Armstrong, Nyngan, N.S.W. |
| JS | Private collection of Mr J. Salkild, Sydney |
| LG | Private collection of Mr G. L. Gooding, Warragul, Vic. |
| MACL | Macleay Museum, Sydney |
| MGF | Museum G. Frey, Tutzing bei München |
| MHN | Museum National d'Histoire Naturelle, Paris |
| NM | National Museum of Victoria, Melbourne |
| NSWDA | New South Wales Department of Agriculture, Rydlemere, N.S.W. |
| QDPI | Queensland Department of Primary Industry, Brisbane |
| QM | Queensland Museum, Brisbane |
| QU | Queensland University, Brisbane |
| SAM | South Australian Museum, Adelaide |

Differentiation of Genera

The genera may be separated as follows:

Alaus s. stricto (American species)

Abdomen in both sexes terminates with evenly rounded 5th sternite; female without modified hairs along the posterior margin of the 5th sternite; scutellum slightly

convex or flat, evenly sloping anteriorly; a pair of large 'eye' spots on pronotum; the paired horseshoe-like chitinous collars on bursa copulatrix rather thin, one side being much shorter than the other (Fig. 1).

TYPE: *Alaus oculatus* L. (designated by Hyslop 1921).

Calais (Africa and Asia)

Males with 5th sternite rounded, females with 5th sternite squared off posteriorly and covered with modified (clavate) hairs along the posterior margin; scutellum short, raised and abruptly depressed anteriorly; base of elytra raised; paired horseshoe-like chitinous collars robust, both sides about equal length (Fig. 3); aedeagus with apices of the lateral lobes somewhat sculptured, apical hooks distinct (Fig. 2), the entire basal sections elongate.

TYPE: *Calais excavatus* Fab. (Pl. 46, fig. 24) (= *senegalensis* Cast.) (designated by Hyslop 1921).

Paracalais (gen. nov.) (Australia, New Guinea, Malayan Archipelago)

Formation of 5th abdominal sternite in male and female similar to that in genus *Calais*. The second and third antennal segments of approximately equal length, as in genus *Calais*. Scutellum flat, gradually sloping anteriorly; in majority of species the third interval more or less elevated to a short ridge or tubercle near the base; paired horseshoe-like chitinous collars moderately robust, one side distinctly shorter than other; aedeagus with lateral lobes not sculptured, apical hooks simple, acute; base short.

TYPE: *Paracalais suboculatus* (Candèze).

Austrocalais (gen. nov.) (Australia)

The 5th abdominal sternite in males truncate, 6th protruding and rounded. In females similar to that in genera *Calais* and *Paracalais*; third antennal segment at least twice as long as second; chitinous horseshoe-like collars on bursa copulatrix very broad, robust, with one side slightly shorter than the other; aedeagus with lateral lobes rounded at apex, apical hook obscure.

TYPE: *Austrocalais pogonodes* gen. et sp. n.

Genus Paracalais gen. nov.

Type species: *Paracalais suboculatus* (Candèze) comb. nov.

(Pl. 43, fig. 15)

The genus contains medium to large rather robust species. The majority of species also have a more or less distinct lateral mark, at about the middle of the sides of the elytra. The entire body is covered with dense whitish, yellowish or greyish scales which are intermingled with darker ones forming regular or irregular patterns.

DESCRIPTION: Legs moderately long, tarsi simple, segments 1-4 diminishing in length, 5th long, about as long as 2-4 together, densely pilose beneath; claws with one or two bristles.

Head gradually slopes forward, more or less depressed in the middle, not carinate in front. Antennae rather short, serrate; 1st segment long, thickened and slightly curved; 2nd and 3rd segments very short—2nd almost globular, 3rd as long or slightly longer than 2nd, but combined length not exceeding the length of 4th

segment; segments 4-10 flattened laterally and diminishing in length; 11th segment oval or elongate, more or less recessed near the apex.

Pronotum moderately to strongly convex, lateral margins usually depressed, posterior angles short, carinate. Prosternum narrowed posteriorly, with sutures almost straight or only slightly curved; antennal grooves present, but short.

Scutellum elongate, pentagonal, flat or slightly depressed in the middle and gradually sloping anteriorly. Elytra transversely convex, elongate with apices varying from conjointly rounded to individually emarginate or mucronate. Striae

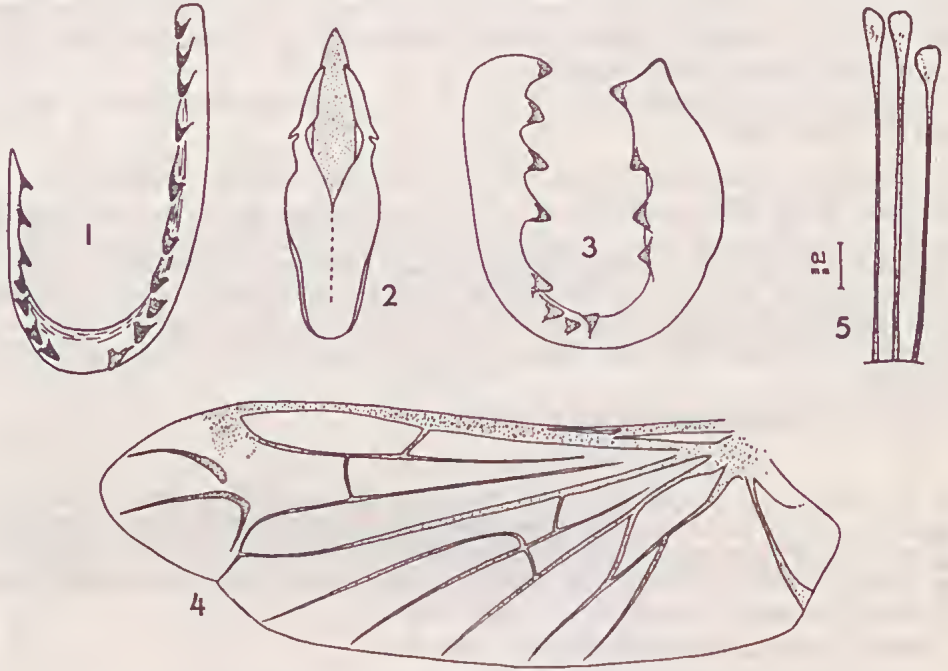


FIG. 1-5—*Alaus oculatus* (L.)—1—chitinous collar of bursa copulatrix; 2-3—*Calais excavatus* (Fab.); 2—aedeagus; 3—chitinous collar of bursa copulatrix; 4-5—*Paracalais prosectus* (Cand.); 4—wing venation; 5—clavate hairs of 5th sternite.

shallow, sometimes indicated by a row of small punctures only; intervals flat or slightly convex, usually finely punctate. The 3rd interval at the base usually raised to form an elevated ridge or tubercle. Wing venation as shown in Fig. 4.

The last visible (5th) abdominal sternite in males reaches almost to the apex of elytra, evenly rounded; in females somewhat squared off and densely covered with specialized (clavate) hairs (Fig. 5) along the posterior margin. A pocket formed by 6th and 7th sternites, at the end of which open the anus, always filled with humus.

The male genitalia slender with lateral lobes of the aedeagus pointed, and apical hooks distinct but short. Internal genitalia of females include a pair of horseshoe-like chitinous collars on bursa copulatrix near and around the entry of colleterial duct.

REMARKS: The naming of Australian *Paracalais* species has been very erratic so that the names attached to some specimens are very misleading.

Before this revision 18 specific names were found to be published and referred in literature to the Australian fauna; one of them, *Alaus mixtus*, was not listed in 'The Check List of Australian Elateridae' (Neboiss 1956: 15-17). This name used by Froggatt (1927, 48) without indication of author or reference, appears to be an unpublished name and as such should be regarded as *nomen nudum*. Further problems arise from Froggatt's papers (1925, 1926 and 1927) with his references to '*Alaus prosectus*'. The figures and descriptions should be referred to *P. gibboni*. While there is doubt about his identification of *P. sericeus* (published as *Alaus sericus*), the identity of *P. macleayi* appears to be correct, as there is a figure published which indicates sufficient details for its recognition.

Examination of Australian material revealed two very distinct, undescribed species, both known from Northern Queensland. Their morphological differences were regarded as sufficient to warrant their separation at generic level and a new genus *Austrocalais* is proposed for them. Among the others were species which appeared foreign to the Australian fauna. One specimen, a male from the Australian Museum, Sydney (K32869) labelled 'N. Australia id. by H. J. Carter as *Alaus macleayi*' is *Calais speciosus* Linné, a well-known spectacular species from Ceylon. Of two other large species one, which is labelled 'N. Australia' from the Australian Museum (K32868) id. by H. J. Carter as *Alaus gibboni* is actually *Alaus sordidus* Westwood, another species from Ceylon and India, while the second, from the National Museum of Victoria labelled 'Queensland', is *Alaus vollenhoveni* Candèze and appears to be unknowingly mixed in among Australian specimens.

The material received from Deutsches Entomologisches Institut, Berlin contained, amongst others, a single specimen identified by Schwarz as *Alaus regalis* and labelled 'Australia'. This species is known to occur in Borneo, and until such time as more material from definite Australian localities is available, should not be regarded as a member of the Australian fauna. The type specimen of *Alaus rectangularis* Schwarz from the same institution showed all characteristics of the genus *Paracalais*, and therefore it is ascribed to this genus. The locality for this species is Larat Island (7° 09'S 131° 45'E) some 450 km N. of Darwin. A number of species recently described in the genus *Alaus* from New Guinea by Zwaluwenburg (1963) also appear to have *Paracalais* elements among them. These would require consideration simultaneously with other *Alaus* species from the Indo-Malayan region.

The material examined also contains a number of specimens which almost certainly belong to new species, but due to their very small number (often only a single specimen) they are not described.

All available information for larvae has been published by Froggatt (1926 and 1927). Most of the given details refer to larvae collected by Froggatt himself and bred to adult stage. Erroneously he identified them as *Alaus prosectus*. The specimens to which Froggatt refers in his publications were available for study from the British Museum Collection, and have now been identified as *Paracalais gibboni*. The larvae are reported to be predatory upon the larvae of a large longicorn (*Diotimana undulata* Pascoe) in felled or fallen Hoop pine (*Araucaria cunninghami*) logs. The very active larvae stop feeding between October and December, when they undertake construction of an oval pupal chamber. The pupation takes place during summer months and after a short period of 15-20 days the adult emerges. According to observations by Froggatt the adults emerge between January

and March, although a few earlier records are available. Unfortunately most of the adult specimens do not have data of their capture on the labels so that knowledge of their occurrence is still very slight.

Queensland entomologist Illidge had also informed Froggatt about '*Alaus gigas*' larvae attacking the larvae of longicorn (*Batocera boisduvali*) in native fig trees, '*Alaus sericeus*' attacking *Monohammus* sp. (Cerambycidae) in poison mangrove stems and '*Alaus macleayi*' attacking *Prioninae* sp. in the decaying stems of *Tristania* and *Eugenia* (Myrtle and Lilly-pilly respectively).

As indicated earlier, determination of the '*Alaus*' species by Froggatt is sometimes erroneous and it has not been possible to check the correctness of *gigas* and *sericeus*, but judging from Fig. 8 (Froggatt 1927) the identity of *macleayi* may be accepted as correct.

KEY TO THE KNOWN SPECIES OF *Paracalais*

1. Lateral margins of mesosternal cavity distinctly swollen at posterior half, more or less abruptly depressed at the anterior half 2
- Lateral margins of mesosternal cavity of similar thickness on the entire length, not abruptly depressed at the anterior half 4
- 2 (1). Apex of elytra emarginate *gibboni* (Newm.)
- Apex of elytra conjointly rounded, sutural carina extended to form a short spine 3
- 3 (2). Elytra with mottled colour pattern *macleayi* (Cand.)
- Elytra with longitudinal dark lines *gigas* (Cand.)
- 4 (1). Apex of elytra conjointly or individually rounded 5
- Apex of elytra truncate, emarginate or mucronate 12
- 5 (4). Elytra with third interval raised to an elevated ridge or tubercle at the base 6
- Elytra with third interval flat or slightly convex at the base (Norfolk Is.) *nesiotes* sp. n.
- 6 (5). Midlateral mark on elytra distinctly separated from background colour and surrounded by much paler greyish or brownish scales 7
- Midlateral mark on elytra indistinctly separated from background or at most bordered by pale scales only along posterior margin 9
- 7 (6). Midlateral mark elongate, about half the length of elytra *lectilis* (Cand.)
- Midlateral mark small rounded, or irregular 8
- 8 (7). Midlateral mark only one or two intervals wide, widest at the margin of elytra *albatus* (Cand.)
- Midlateral mark extends to fifth interval, widest at the third or fourth interval ... *pumilus* (Cand.)
- 9 (6). Antennae with segments 4-10 somewhat pentagonal, serrations large *melancholicus* (Cand.)
- Antennae with segments 4-10 rounded or more or less triangular (serrations small) 10
- 10 (9). Elytra conjointly rounded *funnebris* (Cand.)
- Elytra individually rounded 11
- 11 (10). Pronotum very convex; midlateral markings on elytra small about 3 intervals wide *fornicatus* sp. n.
- Pronotum somewhat flattened posteriorly and along lateral margins; midlateral markings on elytra up to 7 intervals wide *fumereus* (Cand.)
- 12 (4). Pronotum longer than wide, very convex, not flattened along the lateral margins 13
- Pronotum about as long as wide, flattened along the lateral margins 15
- 13 (12). Elytra with apices emarginate, mucronate on both angles *prosapius* sp. n.
- Elytra with apices truncate, or only slightly emarginate, never mucronate 14
- 14 (13). Pronotum with a pair of large dark spots, midlateral markings on elytra not joined at the suture *darwinii* (Blkb.)
- Pronotum with the dark spots small, elongate or almost absent; oblique midlateral markings on elytra joined at the suture forming inverted 'v' pattern *murinus* sp. n.
- 15 (12). Pronotum with pair of elongate or triangular, more or less distinct dark spots 16

- Dark spots on pronotum entirely absent or inconspicuous if present 17
- 16 (15). Midlateral markings on elytra large, semicircular; entire basal half of elytra dark; dark spots on prothorax triangular *suboculatus* (Cand.)
- Midlateral markings on elytra consisting of longitudinal lines in oblique arrangement; base of elytra with a dark line on either side of scutellum; dark spots on prothorax elongate *hayekae* sp. n.
- 17 (15). Elytra with apices mucronate 18
- Elytra with apices truncate or emarginate 20
- 18 (17). Basal slope of elytra covered with distinctly darker scales than the remaining surface of elytra 19
- Basal slope of elytra covered with the same colour scales *spiciformis* sp. n.
- 19 (18). Anterior margin of pronotum with pair of acute well developed spines *spinicollis* (Zwal.)
- Anterior margin of pronotum with pair of short tubercles only *sericeus* (Cand.)
- 20 (17). Apex of elytra truncate with outer angle rounded, sutural carina extended to short spine *victoriae* (Schw.)
- Apex of elytra obliquely truncate or slightly emarginate, both angles similar *prosectus* (Cand.)

Paracalais gibboni (Newman)

(Fig. 6-8; Pl. 43, fig. 1)

Alaus gibboni Newman 1857, Trans. ent. Soc. Lond. (N.S.) 4: 51.

Alaus gibboni Candèze 1874, Mem. Soc. Sci. Liège (2) 4: 146.

Alaus prosectus Froggatt 1925, Austr. For. J. 8 (12): 327, Fig. 1-7.

Alaus prosectus Froggatt 1926, Austr. Nat. Sydney 4: 48.

Alaus prosectus Froggatt 1927, Forest Insects and Timber Borers, p. 46, Pl. 14, fig. 1-7.

Alaus gibboni Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

Alaus gibboni Zwaluwerburg 1959, Pacif. Insects 1 (4): 359.

REMARKS: As indicated in the original description 'Mr Gibbon found a single specimen in a sawpit'. Its size was given as 1.5 unc. (= $1\frac{5}{12}$ in. or 35 mm). Further Newman says that Gibbon 'has with such liberality presented the rarities of his collection to our National Museum' which suggests that the type specimen of *gibboni* should be in the British Museum collection. Miss Hayek informed (in litt.) that the British Museum records show that Gibbon presented 123 specimens of Coleoptera from Moreton Bay to the Museum in 1856, and these specimens should bear the number 1856.1 or 56.1.

There is one example of this species in the British Museum Collection which Zwaluwerberg (1959: 359) has already referred to as possible holotype, and given the measurement of 33 mm. This specimen is undoubtedly that to which Candèze referred (1874: 143) giving the measurement as 35 mm. The discrepancy is probably due to the fact that the prothorax is bent downward in an angle to the abdomen. We can assume that Candèze was looking at the same specimen as Newman. It bears three labels: 1. 'Moreton Bay' (round label). 2. 'Janson Coll. 1903-130'. 3. '*Alaus gibboni* Newm. Cand. Type'—the latter in Janson's handwriting. The size of the specimen agrees. There was apparently only one other specimen of this species labelled 'Browning 63-47' in the British Museum collection at the time that Candèze published his note.

There are two further specimens, both females, from the Janson collection, but from different localities and of different size.

As the search for the possible type specimen in the Hope Museum, Oxford, where part of Newman's collection has been deposited, was unsuccessful, the specimen discussed above has been accepted as being the type of *Alaus gibboni* Newman, and therefore a red type label has been attached to it. This species belongs to one of the largest and most colourful of Australian *Paracalais* and is therefore quite easily distinguished from other species.

DESCRIPTION: Head densely covered with greyish white scales, intermingled with occasional dark ones. Antennae serrate; 2nd segment short, glabrous; 3rd slightly flattened, triangular; segments 4-10 triangular, flattened; 11th clongate recessed near apex.

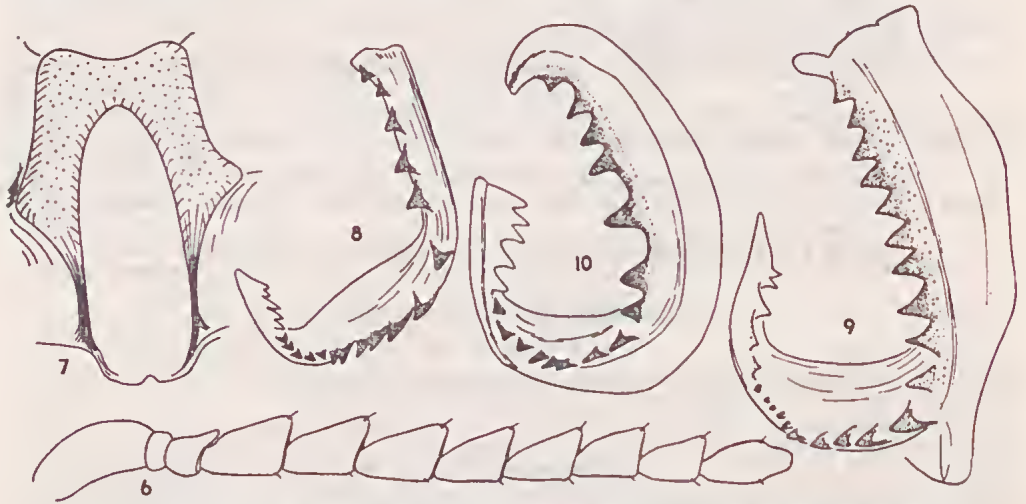


FIG. 6-10—6-8—*Paracalais gibboni* (Newm.); 6—♀ antenna; 7—mesosternal cavity; 8—chitinous collar of bursa copulatrix; 9—*Paracalais macleayi* (Cand.)—chitinous collar of bursa copulatrix; 10—*Paracalais gigas* (Cand.)—chitinous collar of bursa copulatrix.

Pronotum slightly shorter than wide, rounded, widest at the anterior third; anterior margin with a pair of small protuberances; posterior angles acute, diverging and carinate. Scales narrow, clongate, greyish-white, grey or black; the latter forming a pair of elongate spots near the median line; full pattern is shown in Pl. 43, fig. 1.

Scutellum elongate, sides parallel. Elytra gradually and slightly widened to the middle, apex emarginate; third interval elevated near base for short distance only, forming a somewhat clongate tubercule; colour pattern formed by white greyish and black elongate scales, with comparatively very little variation between the examined specimens.

Ventral side densely covered with uniformly buff-coloured scales. Prosternum curved dorsoventrally; anterior margins of prosternal lobe rounded, depressed in the middle; transverse groove if present, incomplete. Muero distinctly bent near the middle; prosternal grooves short. Lateral margins of mesosternal cavity broad posteriorly, narrow and depressed anteriorly.

DIMENSIONS: Length: ♂ 29-37 mm, ♀ 29-44 mm; width: ♂ 9·2-12 mm, ♀ 10·5-15·5 mm.

SPECIMENS EXAMINED: 19 ♂, 78 ♀. AM, BM, CSIRO, DEI, FTF, JA, MACL, NM, NSWDA, QDPI, QM, QU.

TYPE DATA: Location: BM. Locality: Moreton Bay, Q'land.

DISTRIBUTION: Queensland: Kuranda, Brisbane, Bunya Mts. (Nov., Dec. Jan.), Pine Mountains, Rockhampton; Rivertree; Stanthorpe, Moreton Bay; Blackbutt

(Nov.), Binna Burra (Nov.), Imbil State Forest (May), National Park (Nov.), Corinda, Emu Vale (Feb.). New South Wales: Dorrigo (Nov., Jan.-March Froggatt 1926), Manning R., Illawarra, Brunswick R. The locality of two specimens (females) in DEI is given as 'Melb.' (for Melbourne)—which undoubtedly is erroneous.

Froggatt's description and figures (1925, 1926 and 1927) of *Alaus prosectus* should be referred to this species. Specimens in BM collection labelled 'larvae parasite on longicorn larvae in Hoop pine W. W. Froggatt bred 1926' and also id. '*A. prosectus* Cand. W.W.F.'

Paracalais macleayi (Candèze)

(Fig. 9; Pl. 43, fig. 2)

Alaus macleayi Candèze 1857, Mem. Soc. Sci. Liège 12: 235.

Alaus macleayi Froggatt 1925, Austr. For. J. 8 (12): 327, Fig. 8.

Alaus macleayi Froggatt 1927, Forest Insects and Timber Borers, p. 48, Pl. 14, fig. 8.

Alaus macleayi Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

This large species appears to be closely related to *Paracalais gigas*, but the absence of dark longitudinal line pattern on elytra makes it easily distinguishable.

DESCRIPTION: Head flat, only slightly depressed anteriorly. Antennae short, length about half that of pronotum; second segment very short, round; third slightly longer produced downward to a point, almost triangular; following segments flattened laterally somewhat similar to those in *P. gibboni*.

Pronotum as wide as long, convex transversely; anterior margin with only slight protuberances; posterior angles short, stout, divergent; carina short and close to lateral margin.

Scutellum elongate, centrally and posteriorly depressed, lateral margins parallel. Elytra subparallel, conjointly rounded at the apex; sutural carina extended to a sharp point. Third interval raised to an indistinct low elongate ridge on either side of scutellum. The entire dorsal surface densely covered with pale brownish-white scales, which on pronotum are intermingled with occasional dark ones, thus producing a mottled appearance; the dark scales on the elytra form a well-defined mid-lateral spot on each side and usually about four intervals wide; additional colour markings shown in Pl. 43, fig. 2.

Ventral surface covered with similar scales, also retaining spotted appearance of prosternum. Prosternal lobe separated by more or less indistinct transverse line. Prosternal groove very short. Sides of mesosternal cavity broad and elevated posteriorly; narrowed and lowered anteriorly.

DIMENSIONS: Length: ♂ 34-42 mm, ♀ 39-50 mm; width: ♂ 12-14 mm, ♀ 14-15.5 mm.

SPECIMENS EXAMINED: 9 ♂, 59 ♀. AM, BM, CALIF, CSIRO, ETS, JA, JS, LG, MACL, NM, NSWDA, ODPI, QM, QU, SAM.

TYPE DATA: Location: BM. Locality: New Holland.

DISTRIBUTION: Queensland: Gap Creek (Nov.), Cairns, Endeavour R., Finch Hatton (Jan.), Mackay (Jan., Feb.), Stanthorpe (Jan.), Heifer Ck nr. Toowoomba (Jan.), Lamington National Park (Feb.), Moreton Bay (Feb.), Mt. Glorious (Feb.), Southport, Rivertree, Taringa (Feb.), Mt. Gravatt (Apr.), Barden (Nov.), Brisbane, Bowen, Eidswoold, Gladstone. New South Wales: Ingleburn (Apr.), Narrabri (Nov. Dec.), Woy Woy (Jan.), Tweed R., Sydney, Manning R., Ropes Ck, Ash Island, Kurrajong, Grafton (Dec.), Bogan R., Inverell, Gunnedah

(Jan.), Port Macquarie (Jan., Mar.), Richmond, Narrabeen, Wingham, Clarence R. (Dec.), Campden Haven (Jan.).

Paracalais gigas (Candèze)

(Fig. 10; Pl. 43, fig. 3)

Alaus gigas Candèze 1857, Mem. Soc. Sci. Liège 12: 234.

Alaus gigas Gestro 1875, Ann. Mus. Stor. Nat. Genova 7: 10.

Alaus gigas Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

This large Australian species with longitudinally striate elytra is easily distinguished from all other species and should produce no difficulties in identification.

DESCRIPTION: Head flat, only slightly inclined along anterior margin. Antennae short, segments of similar proportions to those of *Paracalais gibboni*.

Pronotum approximately as wide as long, or slightly wider than long; very convex transversely with weak longitudinal median furrow; anterior margin with two small tubercles on either side of midline; posterior angles short, rather blunt, divergent, but extreme tips bent down and backwards; carina short and close to lateral margin.

Scutellum flat, depressed medially, sides somewhat parallel. Elytra evenly narrowed at posterior third, rounded at apex, sutural carina produced to a sharp spine. Third interval raised to a low tubercle on either side of scutellum. Entire dorsal side densely covered with greyish white scales, the line pattern formed by very dark almost black scales, with, in places, lightly coloured tips. Colour pattern as shown in Pl. 43, fig. 3.

Entire ventral surface densely covered with greyish white scales similar to those on dorsal surface. Prosternal groove very short, opening up to a flat suture. Prosternal usually separated by transverse groove which may be incomplete medially; anterior margin with slight depression medially. Mesosternal cavity with the margins widened and elevated posteriorly, depressed and narrowed anteriorly.

DIMENSIONS: Length: ♂ 32-38 mm; ♀ 36-51 mm; width: ♂ 10.5-11 mm; ♀ 11-15 mm. (Miss Hayek informed (in litt.) that the type specimen is only 45 mm long, although the original description gives the size as 50 mm.)

SPECIMENS EXAMINED: 12 ♂, 31 ♀. AM, BM, CALIF, DEI, MACL, NM, QDPI, QM, QU, SAM.

DISTRIBUTION: Queensland: Bunya Mts. (Feb.); Brisbane: St. Lucia (Feb.); National Park, Q'ld. (Nov.); Mt. Tambourine (Nov.), Rivertree. New South Wales: Lismore (Aug.); Richmond R.; Broken Hill. The locality 'Melb.' (for Melbourne) on both specimens from DEI is undoubtedly erroneous.

TYPE DATA: Location: BM. Locality: New Holland.

Paracalais nesiototes sp. n.

(Pl. 43, fig. 4)

This medium-sized species, known only from Norfolk Island, resembles in general colouring the much larger Australian *Paracalais macleayi*, from which it could be separated by the narrow and gradually anteriorly sloping lateral margins of the mesosternal groove.

DESCRIPTION: Head slightly depressed anteriorly. Antennae short, second and third segments almost equal in length and globular, third with short pointed projection on distal margin; fourth segment longer than second and third together; last segment recessed near apex.

Pronotum about as wide as long, widest at middle; in females almost circular, in males slightly elongate; a weak elevated median line visible, posterior angles short divergent, carinate; carina closer, almost parallel to lateral margin.

Scutellum indistinctly pentagonal or almost elongate oval; only slightly depressed in middle.

Elytra gradually widening towards the middle then narrowed to conjointly rounded apices; sutural carina terminates into a minute point; third interval at base, although slightly higher than second and fourth, does not form ridge or tubercle.

Entire underside and legs covered with greyish to yellowish white pubescence. Lateral margins of mesosternal cavity not widened, gradually sloping anteriorly.

DIMENSIONS: Length: ♂ 24·5; ♀ 24-27·5 mm; width: ♂ 8 mm; ♀ 7·5-9 mm.

TYPE MATERIAL: Holotype ♀ Norfolk Island (NM); Allotype ♂; Paratype ♀ Norfolk Island (SAM); 2 paratype ♀♀ Norfolk Island (AM).

DISTRIBUTION: Known only from Norfolk Island, Pacific Ocean (29° 02'S; 167° 57'E).

Paracalais lectilis (Candèze)

(Pl. 43, fig. 5)

Alaus lectilis Candèze 1897, Mem. Soc. Sci. Liège (2) 19: 15.

Alaus lectilis Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

This species has not been recognized since it was first described in 1897 and so far there are only three specimens known to exist in the various collections. It could be easily recognized by the distinct lateral markings and the conjointly rounded tips of the elytra.

DESCRIPTION: Head with median depression, deepest anteriorly. Antennae short, not reaching front coxal cavities, arrangement of segments similar to that of *P. gibboni*.

Pronotum about as wide as long, anterior margin without protuberances; posterior angles rather short, divergent; carina short, closer to the lateral margin. Scutellum with sides parallel, median posterior section depressed. Elytra with parallel sides, narrowing at posterior third, apex conjointly rounded. Third interval raised to a short elevated ridge. The colour pattern as shown in Pl. 43, fig. 5. Prosternal lobe separated by transverse groove which may be incomplete medially; sides of mesosternal cavity parallel neither widened nor depressed.

DIMENSIONS: Length: ♂ ♀ 22-26·5 mm; width: ♂ ♀ 7-8 mm.

SPECIMENS EXAMINED: 1 ♂; 2 ♀.

DISTRIBUTION: Queensland: ex Kershaw coll., no further data (NM). New South Wales: Mullalcy, Dec. 1956, F. E. Wilson (NM).

TYPE DATA: Location: IRSNB, ♀ 'New South Wales/*Alaus lectilis* det. E. Candèze/n. sp. 1895 *Lectilis* N.S.W. Cand. St./Collection Candèze/cf. Mem. Soc. Roy. Sc. Liège 2^e sér. 1897; XIX, p. 15'.

Paracalais albatus (Candèze)

(Fig. 11-13; Pl. 43, fig. 6)

Alaus albatus Candèze 1897, Mem. Soc. Sci. Liège (2) 19: 15.

Alaus albatus Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 15.

Alaus albatus Zwaluwenburg 1959, Pacif. Insects 1 (4): 355.

DESCRIPTION: This is a medium size whitish grey species with short broad and moderately convex pronotum. Entire ventral side and legs of similar colour. Scales

covering pronotum and elytra narrow and pointed. Colour pattern somewhat indistinct, mottled. Pronotum with a distinct narrow white median line and on either side of it a broader, darker but less distinct line. Small dark spot located on either side of the median line about a third way from the anterior margin; another short dark oblique spot located just posteriorly off the eyes. Blackish lateral spot on elytra small, extending the width of only two intervals. Small dark spots scattered irregularly on pronotum and elytra.

Head moderately depressed mid-dorsally. Antennae short, about two-thirds length of pronotum in female, but equal to length of pronotum in male; 2nd segment very short, rounded; 3rd segment slightly longer with apical margin produced laterally to a pointed projection.

Pronotum as wide or slightly wider than long, widest at the anterior third; anterior margin without projections; posterior angles, short, carinate divergent.

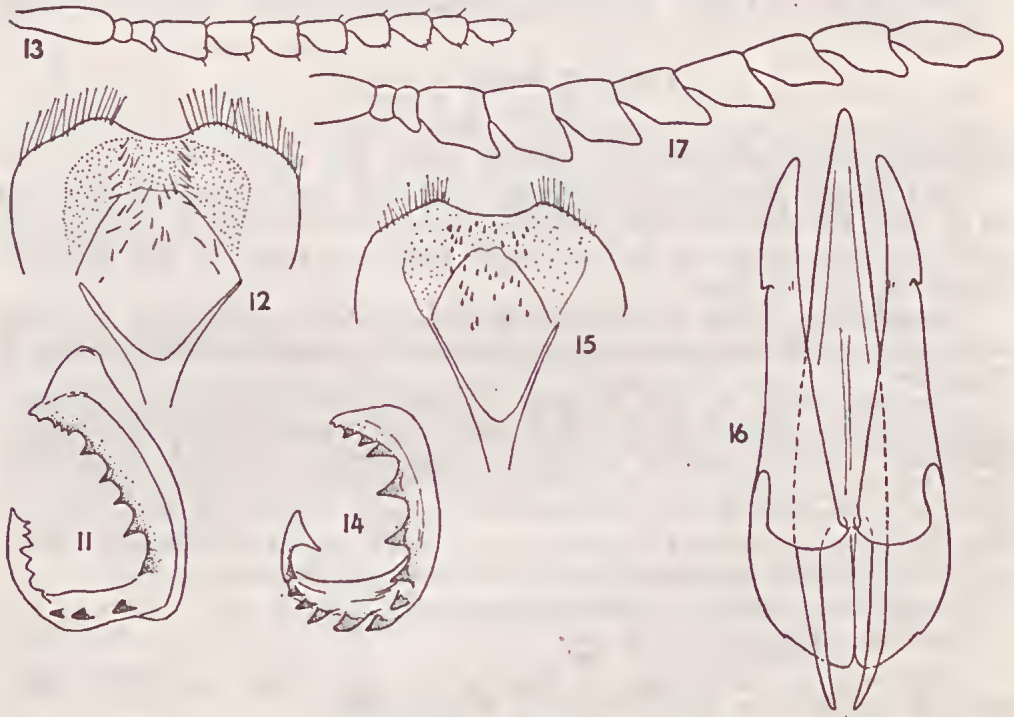


FIG. 11-17—11-13—*Paracalais albatus* (Cand.); 11—chitinous collar of bursa copulatrix; 12—♀ 8th sternite; 13—♀ antenna; 14-15—*Paracalais pumilus* (Cand.); 14—chitinous collar of bursa copulatrix; 15—♀ 8th sternite; 16-17—*Paracalais melancholicus* (Cand.); 16—Type ♂, aedeagus; 17—♂ antenna.

Antennal groove very short. Scutellum elongate, sides parallel, posterior end rounded and slightly depressed. Elytra slightly increase in width to the middle, then curve posteriorly to rounded apices which occasionally tend to be indistinctly truncate. Third interval raised at the anterior end forming a low ridge which, together with the area between, and for a short distance posteriorly, is uneven—vermiculate. Sides of the mesosternal cavity not elevated or otherwise enlarged, sloping anteriorly.

The photograph reproduced is that of the type ♂ kindly provided by Dr A. Villiers of Muscum National d'Histoire Naturelle, Paris.

DIMENSIONS: Length: ♂ 18 mm; ♀ 20 mm; width: ♂ 5 mm; ♀ 6.2 mm.

SPECIMENS EXAMINED: 1 ♀ Mutchilba, N. Qld. Dec. 1933. A. D. Selby (NM); 1 ♂ 'Queensland/Coll. Franklin Müller/*Alaus albatu*s Cand. Compari au type Fautiaux det' (DEI).

DISTRIBUTION: North Queensland.

TYPE DATA: Location: MHN, Paris. ♂; Northern Australia (without further data).

It was stated in the original description that the type is from Fleutiaux collection; the locality was given as Northern Australia and the size as 20 mm × 6 mm. Van Zwaluwenburg examined the specimen and in 1959 published the following note (p. 355). 'Type: PARIS ? (box 52), probably male; 18 mm; Tasmania: identified by Candèze: "Type"' (Fleutiaux's label). The type locality is northern Australia. Generally whitish with pair of small blackish markings (anteriorly divergent) on pronotum, and a short, blackish spot (2 intervals wide) on side of each elytron at about the middle. No specimen of *albatu*s was found in the IRSNB. The label 'Tasmania' is definitely misplaced because there is no record of this genus being found in Tasmania.

Paracalais pumilus (Candèze)

(Fig. 14-15; Pl. 44, fig. 7)

Alaus pumilus Candèze 1874, Mem. Soc. Sci. Liège (2) 4: 149.

Alaus pumilus Neboiss 1956, Mem. Nat. Mus. Viet. 22 (2): 16.

DESCRIPTION: Small, rather distinctly coloured species, covered with greyish white scales, pattern of brownish-black.

Head slightly depressed anteriorly. Antennae short, reaching back as far as front coxal cavities; 3rd segment only slightly longer than 2nd, following segments subtriangular, last elongate, recessed at apex.

Pronotum slightly longer than wide, strongly convex, lateral margins curved, anterior margin with a pair of small tubercles; posterior angles divergent, carina present, short, running close to lateral margin.

Scutellum pentagonal with posterior fifth the widest, middle slightly depressed. Elytra widest at posterior third, apex rounded; third interval elevated to short ridge near the base.

Scales on the ventral surface pale buff. Prosternal lobe separated by more or less distinct transverse groove. Prosternal groove very short; sides of mesosternal cavity parallel, neither widened nor depressed.

DIMENSIONS: Length: ♂ 13-18 mm; ♀ 12.5-20 mm; width: ♂ 3.5-5.5 mm; ♀ 3.5-6 mm.

SPECIMENS EXAMINED: 7 ♂, 17 ♀. AM, BM, CSIRO, QDPI, MACL, NM, QU, SAM.

DISTRIBUTION: Queensland: Rockhampton, Pt. Dennison, Brisbane, Bowen, Eukey (Jan.). New South Wales: Uralla, Tweed River, Illawarra.

TYPE DATA: Location: BM; Type ♀ (15 mm) labelled 'N. Holl. Q'land. Rockhampton/Janson Coll. 1903—130/*Alaus pumilus* Cdz. N. Austr. Tp./*Alaus pumilus* Cdze. Type'. Locality: Rockhampton, Q'ld.

Paracalais melancholicus (Candèze)

(Fig. 16-17; Pl. 44, fig. 8)

Alaus melancholicus Candèze 1874, Mem. Soc. Sci. Liège (2) 4: 147.*Alaus melancholicus* Elston 1930, Ark. Zool. 22: 7.*Alaus melancholicus* Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

The very dark overall appearance, oblique black band and more deeply serrate antennae are the main distinguishing features of this species.

DESCRIPTION: Head slightly concave anteriorly. Antennae deeply serrate; 2nd and 3rd segment approximately equal in length; the third produced downward to a sharp point; segments 4 to 10 as shown in Fig. 17, terminal segment deeply recessed near the apex. Antennae extending back as far as, or further than, front coxal cavities.

Pronotum elongate almost cylindrical; posterior angles short, divergent, carinate.

Scutellum usually inclined to parallel or widest near posterior third, more or less depressed in the middle. Elytra gradually narrowed toward rounded apex. Third interval only slightly elevated to a short ridge near the base.

DIMENSIONS: Length: ♂ ♀ 18-25 mm; width: ♂ ♀ 6-7.5 mm.

SPECIMENS EXAMINED: 10 ♂, 1 ♀. BM, NM, SAM, MACL.

DISTRIBUTION: Queensland (no further details) Type; A. C. T. Canberra (Jan.); Victoria—Melbourne (?); Delly's Dell, Grampians (Feb.).

TYPE DATA: Location: BM labelled: 'N. Holl. Q'ld./Janson Coll. 1903 130/*Alaus melancholicus* Cdz. Type'. The latter label in Janson's handwriting.

Paracalais funebris (Candèze)

(Fig. 18-20; Pl. 44, fig. 9)

Alaus funebris Candèze 1857, Mem. Soc. Sci. Liège 12: 233-234.*Alaus funebris* Heller 1900, Denkschr. med.-nat. Ges. Jena 8 (17): 620.*Alaus funebris* Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

The name *funebris* has been widely used for a great number of specimens belonging to six or seven species. Following the examination of a large number of specimens from various collections it was found that the true *funebris* is apparently quite a rare species, and only two other specimens beside the type, have been ascribed to it.

DESCRIPTION: General colour rather dark greyish brown, pronotum with darker median line, dark lateral spots on elytra indistinct. Ventral surface of similar general colour to that of dorsal side.

Head slightly concave anteriorly. Antennae serrate, reaching just beyond the middle of prothorax; 2nd segment small, globular; 3rd segment small, triangular; segments 4-10 diminishing in length, somewhat pentagonal, flattened laterally; terminal segment distinctly recessed on one side near apex.

Pronotum widest at anterior third, longer than wide, central section of the anterior margin straight, produced forward with slight protuberance on either side.

Elytra parallel for half the length then narrowing to the evenly rounded apex. Third interval raised to a distinct tubercle near the base.

Prosternal lobe separated by indistinct transverse groove, prosternal groove short; sides of mesosternal cavity parallel, narrow and not depressed.

DIMENSIONS: Length: ♀ 23-29 mm; width: ♀ 7-9 mm.

SPECIMENS EXAMINED: 3 ♀. 1 ♀ type (data below), 1 ♀ Yaamba, Q. 5 Jan. 1962 L. A. Powell (QM), 1 ♀ New Holland (BM).

DISTRIBUTION: Queensland: Moreton Bay, Yaamba (Jan.).

TYPE DATA: Location: BM-labelled: 'N. Holl. Moreton Bay/*Alaus funebris* Cdze, Type ex Coll. Deyrolle/Janson Coll. 1903—130/'. On the other side glued on '*funebris* Cdze' (Candèze handwriting).

***Paracalais fornicatus* sp. n.**

(Fig. 21-23; Pl. 44, fig. 10)

This species is distinguished from *P. funereus* and other related species in Australia by its very convex pronotum. The usual colour pattern as shown on Pl. 44, fig. 10, indicates pale brownish-white scales on the sides of the pronotum and an oblique area of the same colour on the posterior half of the elytra. The lateral marking, blackish brown, extends only the width of three intervals; the entire basal section of elytra is dark brown.

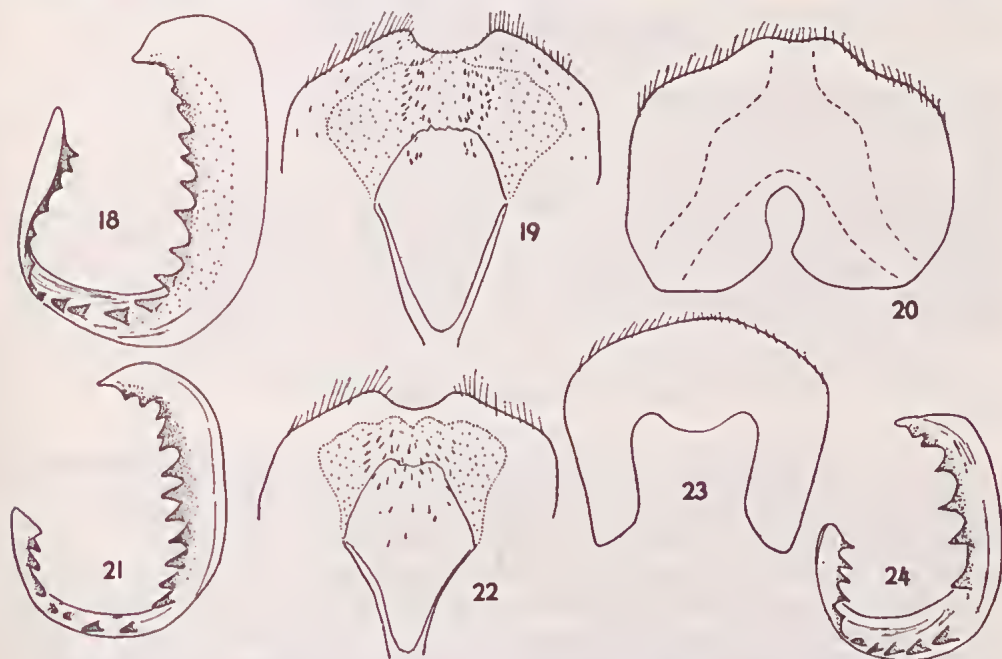


FIG. 18-24—18-20—*Paracalais funebris* (Cand.) Type ♀; 18—chitinous collar of bursa copulatrix; 19—♀ 8th sternite; 20—♀ 8th tergite; 21-23—*Paracalais fornicatus* sp. n., Holotype ♀; 21—chitinous collar of bursa copulatrix; 22—♀ 8th sternite; 23—♀ 8th tergite; 24—*Paracalais funereus* (Cand.) Neotype ♀—chitinous collar of bursa copulatrix.

DESCRIPTION: Head with slight median depression. Antennae short, barely reaching the front coxal cavities; 2nd and 3rd segments very short, globular and approximately of equal length; segments 4-10 subtriangular, diminishing in length; 11th elongate, recessed near the apex.

Scutellum elongate pentagonal, widest at the posterior third where the lateral margins are more or less clevated. Elytra gradually and slightly widened to the middle then curved posteriorly to rounded apices, which occasionally are indistinctly truncate. Third interval at the base raised to an elongate tubercle.

The entire ventral side more or less uniformly brownish.

DIMENSIONS: Length: ♂ 19-21 mm, ♀ 21-26 mm; width: ♂ 6.6-5 mm, ♀ 6.5-8 mm.

TYPE MATERIAL: Holotype ♀ Endeavour R., Queensland (NM); Allotype ♂ Northern Queensland (NM); Paratypes: 1 ♂ Crystal Cascades, via Cairns, N.Q. 22.XII.1964. G. Monteith (QU: C-155), 4 ♀ Endeavor R., N. Q'ld. (1 ♀ DEI, 2 ♀ MACL, 1 ♀ NM), 1 ♀ Churchill Ck Mt. Lewis Road via Julaten 27.XI.1965, N. Q'ld. G. Monteith (NM) (Pl. 44, fig. 10), 2 ♀ Gap Ck, 6 miles N. of Bloomfield R., N. Q'ld. 13-14.XI.1965. G. Monteith (QM: T-6533, QU: C-154), 1 ♀ Coen Distr. Cape York, Q'ld. H. Hacker (DEI) 'id. Fleutiaux *Alaus melancholicus* Cand.' Other specimens examined: 1 ♀ Johnstone R., 1897 (QDPI 10964).

DISTRIBUTION: North Queensland.

Paracalais funereus (Candèze)

(Fig. 24; Pl. 44, fig. 11)

Alaus funereus Candèze 1865, Mem. Cour. Acad. R. Belg. 17: 17.

Alaus funereus Candèze 1874, Mem. Soc. Sci. Liège (2): 4: 146.

Alaus funereus Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

It is rather unfortunate that the type of *funereus* has been lost (Hayek in litt.), but among other British Museum material there is another specimen bearing Janson's label '*Alaus funereus* Cdze. ex Coll. Candèze'. The same name on another label and written by Candèze is glued on the other side of Janson's label. This information provides sufficient evidence that Candèze had identified the specimen as *funereus*, therefore it has been selected as neotype ♀ and labelled as such.

P. funereus closely resembles *P. melancholicus* (Cand.), but differs in the shape of antennae (particularly in the males) and in the form of the lateral marking on elytra.

DESCRIPTION: Head with slight median depression anteriorly. Antennae brownish, short, extending back as far as the front coxal cavities in the male, shorter in the female. Pronotum widest at the anterior third; anterior margin with a pair of distinct protuberances; posterior angles short, divergent, carinate.

Scutellum somewhat pentagonal or mitre-shaped with lateral margins elevated, particularly at the posterior third, apex and centre depressed. Elytra terminates into individually rounded apices. Third interval raised to a distinct tubercle at the base.

The sternum covered with yellowish brown scales in contrast with the ashy grey dorsal scales. Prosternal lobe separated by indistinct transverse groove. Lateral margins of mesosternal cavity parallel, narrow, not depressed.

DIMENSIONS: Length: ♂ ♀ 20-24 mm; width: ♂ ♀ 6.5-7.5 mm.

SPECIMENS EXAMINED: 9 ♂, 22 ♀. BM, CSIRO, MGF, NM, QU.

DISTRIBUTION: Queensland: Moreton Bay, Brisbane, Bowen, Southport, Gatton. New South Wales: Tweed R., Sydney, Maitland, Hunter R. A.C.T.: Canberra. Victoria: Gippsland?

TYPE DATA: BM Neotype ♀ North N. Holl./Janson's Coll. 1903-130/'*Alaus funereus* Cdze. ex Coll. Candèze (Janson handwriting) *A. funereus* Elat. n. Cdze. Nord. Austr./Genitalia prep. E-533 Neboiss 1966 Neotype ♀ *Paracalais funereus* (Cand.) det. Neboiss 1966'.

Paracalais prosapius sp. n.

(Pl. 44, fig. 12)

DESCRIPTION: Moderately small species, rather cylindrical in appearance; covered with greyish-white and black scales; prothorax proportionally long as compared with elytra in other species. Superficially resembles *Paracalais darwini* (Blkb.), but differs by having slightly smaller patches of dark scales on pronotum and mucronate apices of the elytra.

Head with somewhat triangular depression in front. Antennae short; 2nd segment rounded, 3rd slightly longer than 2nd, subtriangular; 4th segment the longest, the following ones shorter and subequal; 11th segment slightly longer than preceding ones, somewhat oval, recessed near apex.

Pronotum longer than wide, anterior margin with a pair of very small tubercles, which are more pronounced in the female; strongly convex, fine elevated median line visible on the posterior half of the pronotum.

Scutellum pentagonal, widest at the posterior third, slightly depressed. Elytra subparallel for two-thirds of the length, then gradually curved towards mucronate apices; third interval elevated on basal slope.

Entire underside and legs covered with greyish white scales. Lateral margins of the mesosternal cavity narrow, horizontal.

DIMENSIONS: Length: ♂ 11.5-15.5 mm, ♀ 18 mm; width: ♂ 3-4 mm, ♀ 5 mm.

TYPE MATERIAL: Holotype ♀ Moa, Banks Island, Torres St. 20 Jan. 1920, W. McLennan; caught on cut trees of Moreton Bay Ash and *Alpinia* at night; Allotype ♂ Moa, Banks Island, Torres St., 18 Dec. 1919, W. McLennan; Paratype ♂ loc. as Holotype, 18 Jan. 1920, caught at light K47753/; all in AM.

DISTRIBUTION: Known only from Banks Island, Torres Strait (10° 12'S, 142° 16'E).

Paracalais darwini (Blackburn)

(Fig. 25-28; Pl. 45, fig. 13)

Alaus darwini Blackburn 1890, Proc. Linn. Soc. N.S.W. (2) 4: 1259-1261.

Alaus darwini Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

This species is known from a single specimen—the type male. It is characterized by the pronotum being distinctly long and convex.

DESCRIPTION: Head centrally depressed, antennae very short, only about two-fifths length of pronotum; 2nd segment short and rounded; segments 3-10 somewhat triangular; last segment oval, slightly longer than preceding one.

Pronotum densely covered with scales, but in denuded areas exposed integument densely punctate with fine punctures; the median line shows as an elevated ridge; the dark scales of the pronotum form a large patch on either side of the median line on the anterior half; anterior margin slightly produced forward just above the sides of the head; posterior angles abruptly flattened, short, pointed and carinate. Elytra somewhat parallel, evenly rounded toward the apices which are lightly emarginate-truncate; colour and pattern have been extensively described by Blackburn (1890). Third interval raised to a short elevated ridge.

Prosternal grooves distinct, almost to the full length of the antennae; a depression accommodates the anterior pair of legs. In cross section prothorax differs considerably from most other species by having lateral margins indicated by rather indistinct ridge and not flattened.

DIMENSIONS: Length: ♂ 19 mm; width: 5.2 mm.

SPECIMENS EXAMINED: Type ♂.

DISTRIBUTION: Northern Territory.

TYPE DATA: Location: BM. Locality: Northern Territory (without further data).

Following the detailed description Blackburn included a note referring to two *Alaus* specimens from King's Sound, Western Australia which W. Macleay (1888: 1240) regarded as variety of *A. funebris* Cand. Without seeing the specimens Blackburn believed them to be *A. darwini*. These specimens were located in the Macleay Museum and were identified as *Paracalais suboculatus* Cand.

***Paracalais murinus* sp. n.**

(Pl. 45, fig. 14)

This grey and black medium-size species is somewhat close to *Paracalais funereus* but could be separated by having the mid-lateral marking on elytra in a form of distinct oblique bar joined at the suture and forming inverted 'v' pattern. Prosternal grooves longer and more distinct.

DESCRIPTION: Head depressed anteriorly. Antennae short; fourth segment about as long as second and third segment together, the following ones subequal, last segment slightly longer, recessed near the apex.

Pronotum longer than wide, distinctly convex, anterior margin with a pair of small tubercles on either side of median line; posterior angles short, carina distinct; disc elevated at the base.

Scutellum elongate pentagonal, slightly depressed posteriorly. Elytra subparallel, rounded at the posterior third apices, narrowly truncate. Third interval raised to distinct tubercle.

The underside covered with greyish white scales, irregularly intermingled with occasional dark ones. Prosternal groove gradually widens posteriorly and reaches front coxal cavities.

DIMENSIONS: Length: ♂ 28.5-31 mm; ♀ 33 mm; width: ♂ 6-7 mm; ♀ 7 mm.

TYPE MATERIAL: Holotype ♀, allotype ♂ (NSWDA), paratype ♂ (NM). Narrabri. Agr. Res. Station, N.S.W., 21 Nov. 1965. Collected at Mercury Vapour Light; W. E. Wright; paratype ♂ Bogan R., N.S.W. J. Armstrong ex F. E. Wilson collection (NM) (this specimen is discoloured yellowish).

DISTRIBUTION: New South Wales.

***Paracalais suboculatus* Candèze**

(Fig. 29-30; Pl. 45, fig. 15)

Alaus suboculatus Candèze 1857, Mem. Soc. Sci. Liège 12: 229.

Alaus variegatus Schwarz 1902, Dtsch. ent. Z. 1902: 114.

Alaus suboculatus Schwarz 1906, Gen. Ins. 46: 38.

Alaus variegatus Schwarz *ibid.* Pl. 2, fig. 4.

Alaus suboculatus Fleutiaux 1907, Bull. Soc. ent. Fr. 1907: 162.

Alaus suboculatus Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 17.

This medium-size species with its distinct colour pattern is readily distinguished from all other Australian species. Particularly noticeable is the pair of dark, somewhat triangular, spots on the pronotum and large rounded mid-lateral marks on the elytra.

DESCRIPTION: Head slightly depressed anteriorly. Antennae reaching back almost as far as the front coxal cavities; second segment very short, rounded; third

almost twice as long, produced downward to a point; fourth to tenth diminishing in length, flattened laterally; the last segment elongated, recessed at the apex.

Pronotum about as long as wide or slightly longer than wide; anterior margin with pair of small protuberances, posterior angles short, divergent; carina distinct,

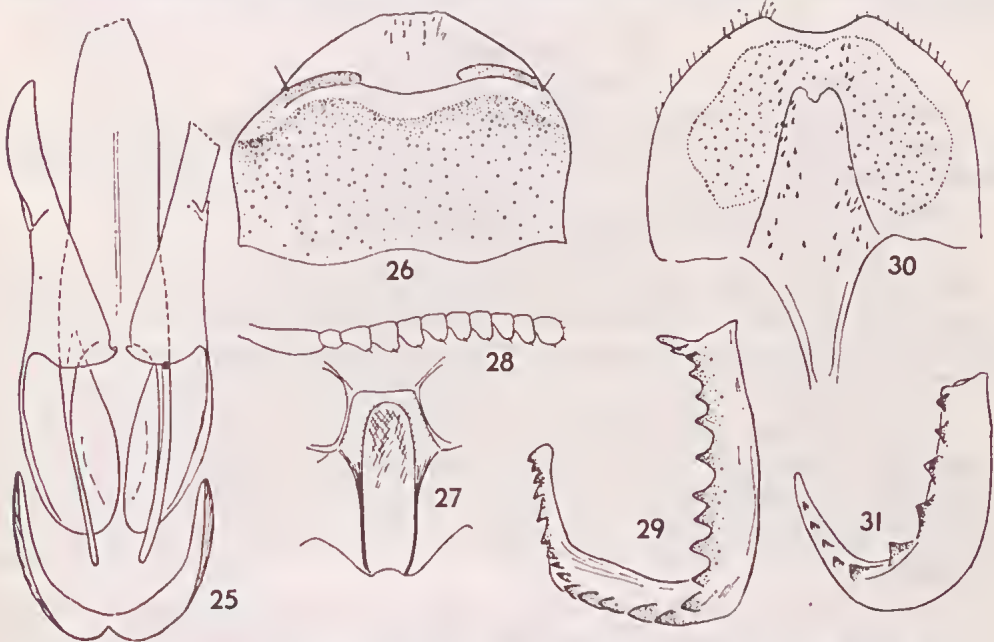


FIG. 25-31—25-28—*Paracalais darwini* (Blkb.) Type ♂; 25—acdeagus; 26—♂ 8th tergite; 27—mesosternal cavity; 28—antenna; 29-30—*Paracalais suboculatus* (Cand.); 29—chitinous collar of bursa copulatrix; 30—♀ 8th sternite; 31—*Paracalais hayekae* sp. n., Paratype ♀, chitinous collar of bursa copulatrix.

considerably elevated; coverage of scales very dense, anterior half lightly coloured yellowish or greyish white, posterior half darker, brown or blackish brown; the pair of subtriangular dark spots at the middle usually bordered with pale scales.

Scutellum flat, depressed posteriorly, lateral margins somewhat parallel. Elytra subparallel to the middle then gradually narrowed; apex truncate. Third interval raised to an elevated ridge which sometimes forms an elongated tubercle.

On the ventral surface colour mostly yellowish brown except for section between second and third pair of legs where it is greyish white. Prosternal groove short, suture flat; prosternal lobe separated by transverse depression which is more distinct on either side than in the middle. Mucro with distinct longitudinal groove from base to about half its length. Lateral margins of the mesosternal cavity slightly depressed in the middle, narrow but elevated anteriorly.

DIMENSIONS: Length: ♂ 18-26 mm; ♀ 17.5-31 mm; width: ♂ 6.5-8.5 mm; ♀ 7-10 mm.

SPECIMENS EXAMINED: 5 ♂, 29 ♀. BM, DEI, NM, SAM, QU, MACL, FTF, AM, CSIRO, QM.

DISTRIBUTION: Queensland: Cooktown, Chillagoe, Winton, Somerset, Groote Eylandt, Cunnamulla (Dec.). Western Australia: Nicol Bay, Dedari (Feb.), Kings

Sound, Tambrey, Roebuck Bay, Cue, Lake Austin, Kimberleys Research Stn. Northern Territory: Port Darwin, Hermansburg.

TYPE DATA: Location: BM. Locality: New Holland. Type of *variegatus* Schw. DEI 2 specimens both labelled 'Queensland/Coll. Schwarz/Cotypes/*variegatus* Schw.'

***Paracalais hayekae* sp. n.**

(Fig. 31; Pl. 45, fig. 16)

This large and spectacular species from North Queensland closely resembles *Paracalais gibboni*, but can be easily separated by its general brownish colour, dark elongate mark on either side of scutellum and shape of pronotum.

DESCRIPTION: Head with central depression covered with light buff scales. Antennae short, with similar segmental proportions to those of *P. gibboni*.

Pronotum as long as, or slightly longer than wide and widest at the middle; anterior margin with two distinct protuberances; posterior angles short, stout, divergent; carina indistinct, very close to the lateral margin; median line well defined, spot of dark brownish-black scales on either side near the middle; scales elongate, light to warm buff.

Scutellum with lateral margins somewhat parallel; scales warm buff with paler tips, along posterior margin closer together forming a light buff border. Elytra subparallel, gradually rounded towards truncate apices; scales elongate, of light and warm buff, and brownish black. Colour pattern characterized by an elongated brownish-black patch on either side of the scutellum, same colour arrangement of lines near middle and apex as shown in Pl. 45, fig. 16. Third interval raised to form a tubercle.

Scales on ventral surface less dense, colour more greyish than buff. Prosternal groove very short, opening into gradual depression; prosternum slightly curved dorsoventrally, apex of mucro slightly bent. Sides of mesosternal cavity broad along the posterior half; narrow at the anterior half, not depressed.

DIMENSIONS: Length: ♂ 32 mm, ♀ 30-41 mm; width: ♂ 10 mm, ♀ 9-13 mm.

TYPE MATERIAL: Holotype ♀ Coen Distr. Cape York, Queensland. H. Hacker (NM); allotype ♂ Coen R., Q. W. D. Dodd (SAM); paratypes: 3 ♀ Coen R., Q. W. D. Dodd (NM) 4 ♀ Coen Dist. Cape York, Queensland, H. Hacker (IRSNB, MACL, SAM); 1 ♀ Coen, N.Q. H. Hacker, Dec. 1905 (QM: T-6534); 1 ♀ Coen, N.Q. 5 Dec. 1905 (QU: C-146); 1 ♀ Cooktown, N.Q. H. Hacker (CSIRO); 1 ♀ no loc. (QU: C-147). Other material examined: 2 ♀ no loc. (QM, QU), both damaged specimens.

DISTRIBUTION: North Queensland.

This species has been dedicated to Miss Christine von Hayek of the British Museum (Nat. Hist.), London, in recognition of her assistance and advice.

***Paracalais spiciformis* sp. n.**

(Pl. 46, fig. 19)

Moderately large species with rather distinctly posteriorly tapering appearance, and comparatively large pronotum. It resembles *Alaus constrictus* Schwarz, but is larger and with distinctly mucronate apices of the elytra.

DESCRIPTION: Head rather square, centrally depressed. Antennae short, second and third segments globular, third with pointed projection on distal margin.

Pronotum about as wide as long, mid-section of anterior margin prominent, disc elevated at base; posterior angles short, carinate.

Scutellum elongate pentagonal, slightly depressed posteriorly. Elytra subparallel near base then gradually tapering to emarginate mucronate apices. Third interval elevated to slightly elongate tubercle.

Entire underside covered with greyish to yellowish white scales. Lateral margins of mesosternal cavity subhorizontal, not widened.

DIMENSIONS: Length: ♀ 30-32 mm; width: 9.5-10.5 mm; ♂ unknown.

TYPE MATERIAL: Holotype ♀ (SAM); 2 paratypes ♀ Pt. Darwin, Northern Territory (Feb.) ex Griffith Collection (SAM, NM).

DISTRIBUTION: Northern Territory.

Paracalais spinicollis (Zwaluwenburg)

(Fig. 32-33; Pl. 45, fig. 17)

Alaus spinicollis Zwaluwenburg 1951, Haw. Ent. Soc. Proc. 14: 323.
Alaus spinicollis Zwaluwenburg 1959, Pacif. Insects 1 (4): 362.

Originally this species was described from material collected in New Guinea, but the examination of Australian material showed clearly its existence on this continent.

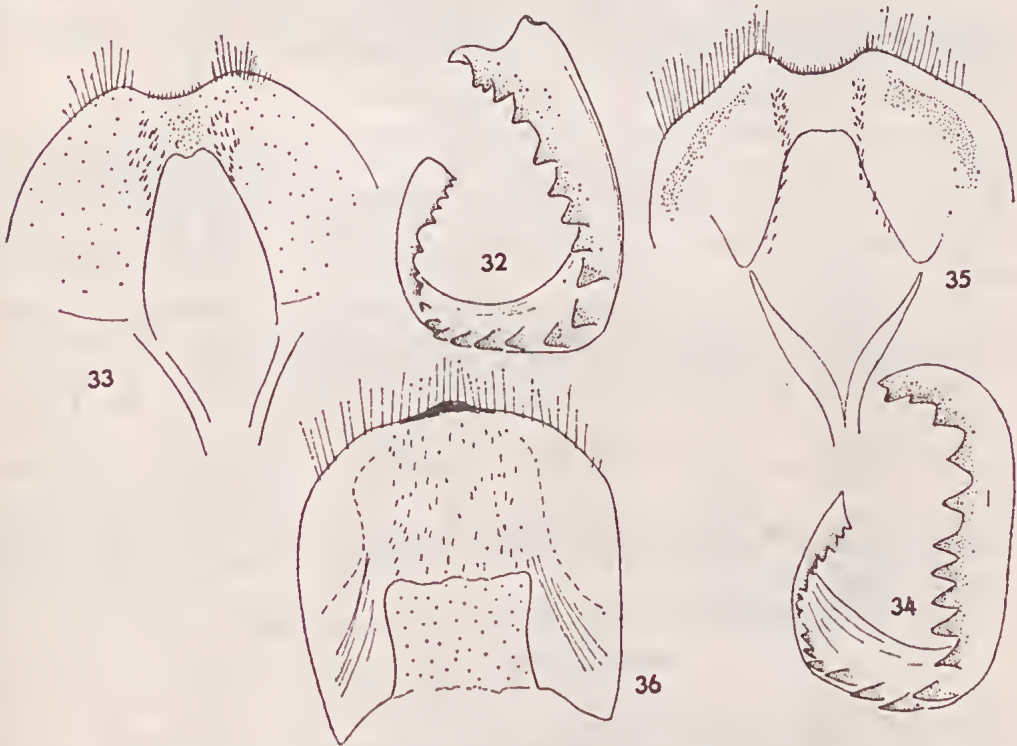


FIG. 32-36—32-33—*Paracalais spinicollis* (Zwal.) Paratype ♀ (New Guinea); 32—chitinous collar of bursa copulatrix; 33—♀ 8th sternite; 34-36—*Paracalais sericeus* (Cand.); 34—chitinous collar of bursa copulatrix; 35—♀ 8th sternite; 36—♀ 8th tergite.

DESCRIPTION: Head slightly concave anteriorly, posterior position more or less flattened. Antennae short, extending just beyond middle of prothorax in males and slightly shorter in females; second segment very short; third slightly longer, sub-triangular; segments 4-10 somewhat triangular; last segment elongated, recessed near the apex.

Pronotum widest at anterior third, slightly longer than wide; anterior margin produced into a sharp pointed spine on either side of the midline; posterior angles acute, divergent, earinate.

Scutellum flat, depressed at posterior third, where it is widest. Elytra subparallel to the midlateral marking, which in Australian specimens is four intervals wide (in majority of New Guinea specimens examined, three intervals wide); third interval raised anteriorly to a somewhat rounded tubercle, tips individually emarginate, equally and strongly mucronate on both angles.

DIMENSIONS: Length (Australian specimens): ♀ 25-28 mm; width: ♀ 7.5-8 mm.

SPECIMENS EXAMINED: 4 ♀. NM, QU, DEI.

DISTRIBUTION: North Queensland: Coen, Iron Range (Nov.) and New Guinea.

TYPE DATA: Location: BM. Locality: Humboldt Bay Distr., Bewani Mts., N.G. (West Irian).

***Paracalais sericeus* (Candèze)**

(Fig. 34-36; Pl. 45, fig. 18)

Alaus sericeus Candèze 1874, Mem. Soc. Sci. Liège (2) 4: 148.

Alaus sericeus Candèze 1878, Ann. Mus. Stor. nat. Genova 12: 106.

Alaus sericeus Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

Alaus sericeus Zwaluwenburg 1959, Pacif. Insects 1 (4): 362.

This species closely resembles the more common *Paracalais prosectus*, but its distribution is more northerly. Due to the variation in colour pattern this could not be used successfully for identification, and the only reasonably reliable external character was found to be the emarginate apices of elytra. Both angles of each emargination are mucronate, and thus easily separated from *P. prosectus* truncated apices.

The differences in genital characters, although slight, are sufficient to support the separation of *sericeus* from *prosectus*. In *sericeus* females the hoof-like chitinous structure is narrower and more rounded than in *prosectus*.

DIMENSIONS: Length: ♂ 19-25.5 mm, ♀ 23-30.5 mm; width: ♂ 5.5-8.5 mm, ♀ 6.5-9.5 mm.

SPECIMENS EXAMINED: 3 ♂, 30 ♀. AM, BM, CALIF, CSIRO, DEI, NM, QM, QU.

DISTRIBUTION: Queensland: Endeavour R., Cape York, Port Albany, Cooktown, Cairns, Coen, Townsville, Stanthorpe (?). Northern Territory: Darwin, Adelaide R., Humpty Do.

TYPE DATA: BM 'N. Holland/Roekhampton/Janson Coll.'

***Paracalais victoriae* (Schwarz)**

(Fig. 37-38; Pl. 46, fig. 20)

Alaus victoriae Schwarz 1902, Dtsch. ent. Z. 1902: 116.

Alaus victoriae Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 17.

Although the type specimen has been labelled 'Victoria', it seems most unlikely that it really is a Victorian species. It was possible to match only three other specimens, all of them from Queensland. Superficially this species resembles *Para-*

calais prosectus, but the differently formed apex of the elytra is sufficient to separate it from this and other related species. The general colour pattern is of light ochraceous buff mottled with darker ochraceous tawny spots; mid-lateral spot on elytra narrow, equal to the width of two or three intervals only.

DESCRIPTION: Apex of the elytra truncate, the outer angle rounded; sutural carina extended to a short spine. Third interval near the base elevated to a short ridge.

DIMENSIONS: Length: 17-20 mm; width, 5-6 mm.

SPECIMENS EXAMINED: 2 ♂, 2 ♀. DEI, NM, QM.

DISTRIBUTION: Queensland: Upper Finch Hatton Ck, via Finch Hatton (Jan.), Mossman Gorge (Dec.), Canungra (Apr.).

TYPE DATA: Location DEI labelled 'Victoria/Collection Schwarz/Typus/ *Victoriae* Schw.'

Paracalais prosectus (Candèze)

(Fig. 39-40; Pl. 46, fig. 21)

Alaus prosectus Candèze 1857, Mem. Soc. Sci. Liège 12: 236.

Alaus immaculatus Schwarz 1902, Dtsch. ent. Z. 1902: 115. *Syn. nov.*

Alaus subsericeus Schwarz 1902, Dtsch. ent. Z. 1902: 115. *Syn. nov.*

Alaus prosectus Neboiss 1956, Mem. Nat. Mus. Vict. 22 (2): 16.

Judging from the number of specimens available for study *Paracalais prosectus* appears to be the most common species of the genus in Australia. It is widely

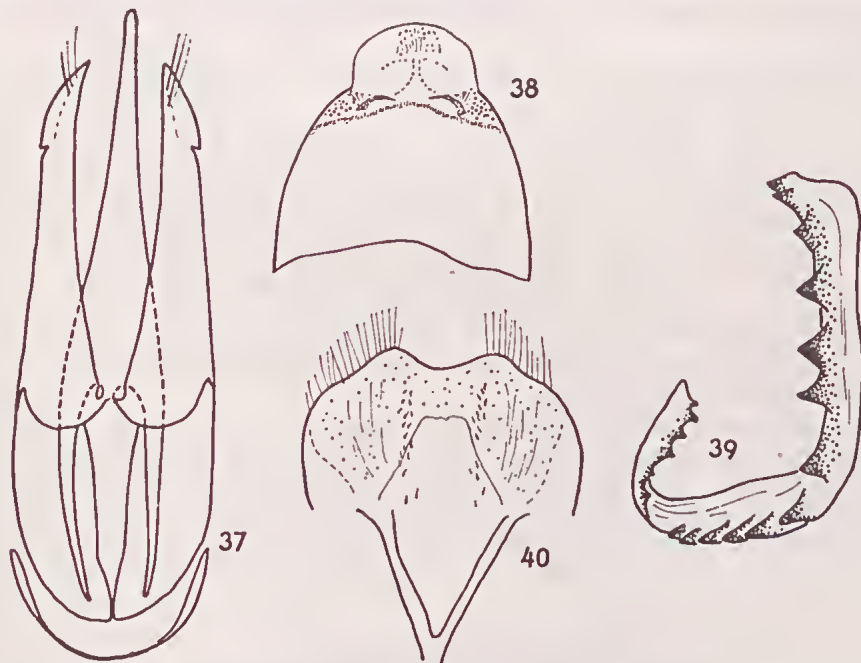


FIG. 37-40—37-38—*Paracalais victoriae* (Schwarz) Type ♂; 37—aegeagus; 38—♂ 8th tergite; 39-40—*Paracalais prosectus* (Cand.); 39—chitinous collar of bursa copulatrix; 40—♀ 8th sternite.

distributed and varies considerably in size. Following the examination of types it was decided that the two species described by Schwarz, namely *immaculatus* and *subsericeus* should be regarded as synonyms. The size, colour and other characters of these two specimens fall well within the range of *prosectus* specimens.

Paracalais prosectus together with *P. albatu*s, *P. sericeus* and *P. spinicollis* form a closely related group, of which *spinicollis* appears to have the most northerly distribution, extending into New Guinea, *prosectus* the most southerly, being widespread in New South Wales. General colour usually varies between greyish white and yellowish white, but when greasy the specimens lose the colour pattern altogether. The scales on the ventral surface are usually more yellowish than those on dorsal.

DESCRIPTION: Head slightly concave anteriorly. Antennae serrate, slightly longer in males than in females, extending as far back as the front coxal cavities; last segment recessed near the apex.

Pronotum about as wide as long or slightly wider; anterior margin with a pair of small tubercles on either side of median line; posterior angles diverging, carinate.

Scutellum elongate, pentagonal, depressed and pointed posteriorly; lateral margins parallel. Elytra subparallel as far as half way, then gradually curved to the truncate apex. Third interval raised to an elongate tubercle at base. The midlateral spot varies from a distinct mark of up to three intervals width to an almost unnoticeable few dark scales. Prosternal lobe not distinctly separated, antennal groove very short; sides of mesosternal cavity slightly and gradually sloping anteriorly.

DIMENSIONS: Length: ♂ 21-30 mm, ♀ 20-33.5 mm; width: ♂ 6.5-9 mm, ♀ 6-10.5 mm.

SPECIMENS EXAMINED: 37 ♂, 100 ♀. AM, BM, CALIF, CSIRO, DEI, FH, IRSNB, MACL, MGF, NM, SAM, QM, QU.

DISTRIBUTION: Queensland: Gap Ck (Bloomfield R.), Goodna (Oct.), Lake Barrine (Jul.), Churchill Ck via Julatten (Nov.), Finch Hatton (Jan.), Dunwich (Stradbroke Isl.) (Apr.), Endeavour R., Mackay, Mt. Tambourine (Nov.), Biloela (Jan.), Geraldton (now Innisfail) (Nov.), Brisbane, Little Mul-Grove R., Bunya Mts. (Jan.), Kuranda (Jan.), Cairns, Mt. Molloy (Dec.), Moggill (Apr.), Middle Ridge (Jan.), Stonelands (Nov.), Clump Point (Sept.), Atherton (Dec.). A.C.T.: Canberra (Jan.). New South Wales: Dorrigo (Jan.), Sydney, Canowindra (Dec.), Tweed R. (Dec.), Rivertree, Ourimbah (Nov.), Evans Head Cabramatta (Oct.), Batemans Bay (Oct.), Rous (March). S. Australia: Nuriootpa (abraded, probably this species).

TYPE DATA: *Alaus prosectus* Candèze, BM; 'N. Holl. Sydney/Janson Coll. 1903-130/92/*Alaus prosectus* Type Cdz. ex Coll. de Laferte' (in Janson handwriting)/*prosectus* (Candèze handwriting). *Alaus immaculatus* Schwarz—DEI. Cotype ♀ 'N. Queensland/Coll. Schwarz/Cotypus/Genit prep. E-534 Neboiss 1966'. Cotype ♂ 'N. Queensland E. Weiske/Coll. Schwarz/Cotypus/*immaculatus* Schw.' *Alaus subsericeus* Schwarz-DEI 'N.S.Walcs/Typus/Coll. Schwarz/*subsericeus* Schw.'

Genus *Austrocalais* gen. nov.

Type species *Austrocalais pogonodes* gen. et. sp. nov.

Although very similar to *Paracalais*, the two species referred to the new genus exhibit certain characteristics which warrant a separation at generic level.

Species of medium to moderately small size, densely covered with short, broad scales which form more or less distinct oblique lateral marking on the elytra similar to that of many species of *Paracalais*.

Head quite square, with the anterior angles elevated, centre depressed. Antennae short, second segment very short, rounded; third segment elongate, at least twice as long as second, their combined length about equal or longer than fourth; the latter and following segments flattened laterally; 11th segment elongated, oval, apex more or less distinctly truncate.

Pronotum moderately convex, lateral margins slightly depressed, posterior angles short, carinate, divergent. Prosternum narrowed posteriorly, sutures slightly curved outwards, antennal grooves present only for short distance at anterior end, levelled out to slight depression posteriorly. More or less distinct patch of beard-like hairs at anterior end of prosternum.

Scutellum elongated, pentagonal, evenly sloping forward, flat or slightly raised longitudinally in the centre, posterior end depressed, sides parallel. Elytra transversely and moderately convex, apices variable, truncate to mucronate according to species. Striae formed by a single row of punctures, intervals flat or only slightly convex, finely punctate; 3rd interval raised to short narrow ridge at base.

The 5th abdominal sternite in males truncate with row of bristles along posterior margin, 6th sternite visible and rounded. In females last visible sternite (5th) squared off in a manner similar to those in genera *Calais* and *Paracalais*, covered with modified hairs along posterior margin. Presence of humus in the pocket formed by 6th and 7th sternite similar to that on *Calais* and *Paracalais*.

Male genitalia more robust than in *Paracalais*; lateral lobes of aedeagus rounded apically, apical hooks obscure.

Walls of bursa copulatrix at the base distinctly darkened, and densely covered with minute chitinous spines. The horseshoe-like chitinous collars at the opening of colleterial glands very broad, one side being distinctly longer than the other.

KEY FOR SEPARATING SPECIES OF THE GENUS *Austrocalais*:

- Apex of elytra mucronate (Pl. 46, fig. 22) *pogonodes* sp. n.
- Apex of elytra truncate (Pl. 46, fig. 23) *aquilonaris* sp. n.

***Austrocalais pogonodes* sp. nov.**

(Fig. 41-46; Pl. 46, fig. 22)

The species is easily recognized by the sharply mucronate apices of the elytra, distinct colour pattern formed by large mid-lateral markings and relatively large prothorax.

DESCRIPTION: Head with deep central depression forming distinctly elevated anterior angles above base of the antennae. Antennae rather short; 3rd segment about 2-3 times as long as 2nd; the following segments short and broad; last segment somewhat elongated, rounded; apex somewhat truncate, recess indistinct.

Pronotum with anterior margin somewhat scalloped; the median line elevated, more distinctly at posterior third and basal slope. Lateral margins subparallel, posterior angles short, divergent; carina short and close to lateral margin.

Scutellum pentagonal, widest at posterior third, slightly raised in the centre, posterior end depressed. Elytra about twice as long as prothorax; mid-lateral marking large, extending over seven intervals, bordered by whitish scales. Third interval raised to form elevated, more or less elongated ridge at the base; apices of the elytra individually emarginate, each angle being equally and strongly mucronate.

DIMENSIONS: Length: ♂ 16-20 mm, ♀ 18-24 mm; width: ♂ 5-6.5 mm, ♀ 6-7.5 mm.

TYPE MATERIAL: Holotype ♀ Coen, Qld. (ex F. E. Wilson collection) (NM); allotype ♂ Cape York, Qld. (NM); paratypes 8 ♀, 1 ♂; paratype ♂ N.Q. 12/24 (ex E. Sutton Coll.) (QM: T-6536); paratype ♀ Coen District, Cape York, H. Hacker; id. as *Alaus melancholicus* Cand. by Fleutiaux (DEI); paratype ♀ 'L.M.R.N.Q.'* ex K. K. Spence Coll. id. as *Alaus pumila* by Carter (AM); paratype ♀ 'L.M.R.N.Q.' id. as *Alaus sericeus* by Carter (CSIRO); 2 paratype ♀ Coen R., Q. W. D. Dodd (SAM); paratype ♀ Cairns (MACL); paratype ♀ Coen District, Cape York, Queensland, H. Hacker (IRSNB); paratype ♀ Cairns distr. J. A. Anderson (QM: T-6535).

* Locality 'L.M.R.N.Q.' = Little Mulgrave R., North Queensland.

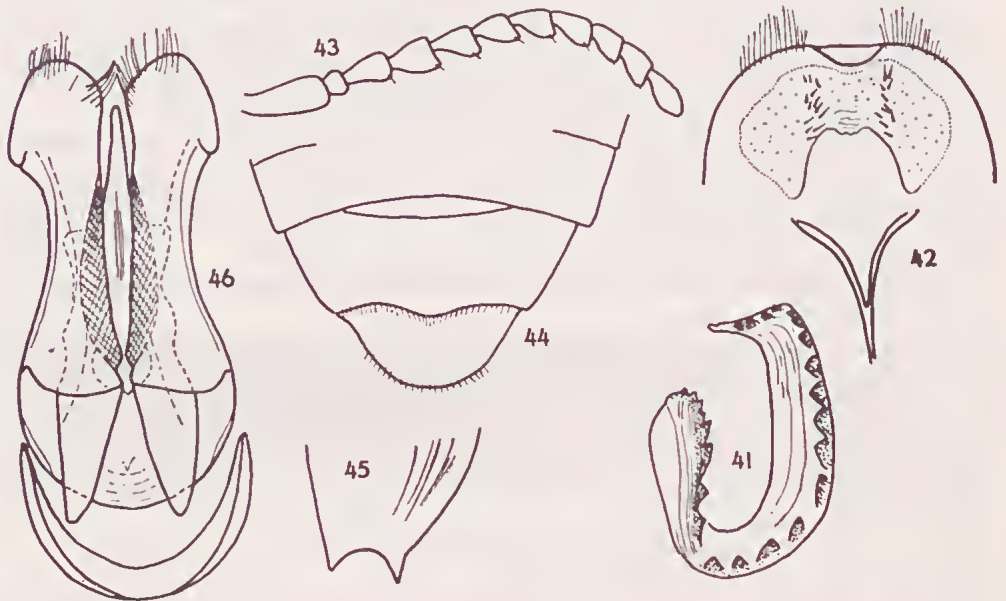


FIG. 41-46—41-46—*Austrocalais pogonodes* sp. n.; 41—Holotype ♀, chitinous collar of bursa copulatrix; 42—♀ 8th sternite; 43—♂ antenna; 44—♂ abdominal segments IV-VI; 45—apex of clytron; 46—paratype ♂ aedeagus.

DISTRIBUTION: North Queensland.

Austrocalais aquilonaris sp. nov.

(Fig. 47-49; Pl. 46, fig. 23)

Smaller than the preceding species, and easily distinguished by the truncate elytral apices. Pattern formed by whitish (ochraceous buff) and warm, black scales as shown in Pl. 46, fig. 23.

DESCRIPTION: Head centrally depressed; forming an elevated angle above the antennal base; dark triangular pattern anteriorly between the base of antennae. Antennae short; third segment almost twice as long as second, their combined length exceed the length of 4th segment; 11th segment almost oval.

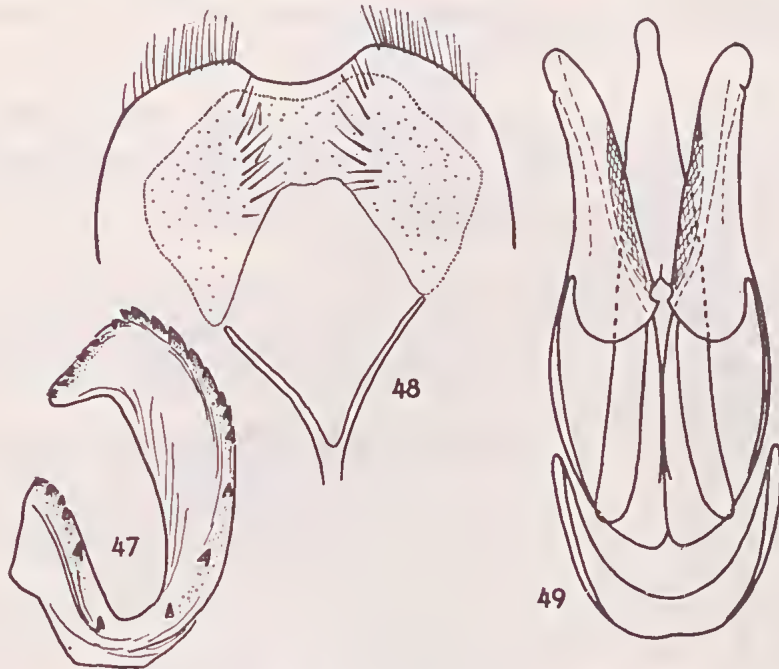


FIG. 47-49—47-49—*Austrocalais aquilonaris* sp. n.; 47—Paratype ♀ chitinous collar of bursa copulatrix; 48—♀ 8th sternite; 49—allotype ♂ aedeagus.

Pronotum with slightly elevated median line, which may be nearly absent in smaller specimens; anterior margin almost straight; posterior angles short, blunt; carina short and close to the lateral margin.

Elytra subparallel for anterior two thirds then gradually rounded towards truncate apices. Dark oblique midlateral marking bordered by line of whitish scales posteriorly. Third interval raised to elevated narrow ridge at the base.

♂ Genitalia pattern similar to that of *pogonodes* and shown in Fig. 49.

DIMENSIONS: Length: ♂ 9-14 mm; ♀ 10-14 mm; width: ♂ 2.2-4.5 mm; ♀ 3-4.5 mm.

TYPE MATERIAL: Holotype ♀ (QM: T-6531); allotype ♂ (QM: T-6532); paratypes 3 ♀ 6 ♂, all from Iron Range, Cape York Peninsula, N. Qld. 16-23 Nov. 1965, G. Monteith. 2 ♀ 4 ♂ paratypes (QU: C-148 to C-153); 1 ♀ 2 ♂ paratypes (NM).

DISTRIBUTION: North Queensland.

Acknowledgements

The author is greatly indebted to the Institutions and private collectors for the loan of specimens and permission to study their material. Special thanks are due to Miss C. von Hayek, British Museum (Natural History), London; Dr L. Dieckmann, Deutsches Entomologisches Institut, Berlin; Dr A. Villiers, Museum National d'Histoire Naturelle, Paris, and Dr R. Damoiseau, Institut Royal des

Sciences Naturelles de Belgique, Brussels, for their valuable help and co-operation with information and loan of types.

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Explanation of Plates

Scale: line alongside each figure indicates 5 mm.

PLATE 43

- Fig. 1—*Paracalais gibboni* (Newm.) ♀ (NM).
 Fig. 2—*Paracalais macleayi* (Cand.) ♀ (NM).
 Fig. 3—*Paracalais gigas* (Cand.) ♀ (NM).
 Fig. 4—*Paracalais nesiotis* sp. nov., Holotype ♀ (NM).
 Fig. 5—*Paracalais lectilis* (Cand.), Holotype ♀ (IRSNB).
 Fig. 6—*Paracalais albatius* (Cand.), Type ♂ (MHN Paris).

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- Fig. 7—*Paracalais pumilus* (Cand.) ♀ (NM).
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 Fig. 12—*Paracalais prosapius* sp. n., Holotype ♀ (AM).

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- Fig. 13—*Paracalais darwini* (Blkb.), Holotype ♂ (BM).
 Fig. 14—*Paracalais murinus* sp. nov., Holotype ♀ (NSWDA).
 Fig. 15—*Paracalais suboculatus* (Cand.) ♀ (NM).
 Fig. 16—*Paracalais hayekae* sp. nov., Holotype ♀ (NM).
 Fig. 17—*Paracalais spinicollis* (Zwal.) ♀ (QM).
 Fig. 18—*Paracalais sericeus* (Cand.) ♀ (BM).

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- Fig. 19—*Paracalais spiciformis* sp. n., Holotype ♀ (SAM).
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